

REMARKS/ARGUMENTS

Claims 1-7, 9-16 and 18-21 are pending herein. Claim 9 has been rewritten in independent form, and thus claim 8 has been canceled without prejudice or disclaimer. Claim 16 has been amended to depend from claim 9.

Entry of the above-mentioned amendments to claims 9 and 16 after final rejection is proper under Rule 116 because those amendments do not present new issues (i.e., claim 9 was rewritten in independent form and the dependency of claim 16 was changed to depend from claim 9). Accordingly, entry of amended claims 9 and 16 are respectfully requested.

Examiner Kwok is thanked for courtesies extended to Applicants' representative (Steven Caldwell) during a telephonic interview on August 12, 2003. During the interview, Examiner Kwok tentatively agreed to withdraw all of the art-based rejections of record (discussed further below).

1. Claims 1-16 and 18-21 were rejected under §102(b) over each of Otani and Asano. As discussed above, Examiner Kwok tentatively agreed that Otani and Asano do not disclose that a vibration element is mounted on a semiconductor integrated circuit chip that is mounted on a circuit board, as recited in pending claim 1. Examiner Kwok further agreed that Otani and Asano do not disclose that a vibration element and a semiconductor integrated circuit chip are arranged to be overlapped with one another (as recited in pending claim 9) or that a vibration element and a semiconductor integrated circuit chip are positioned on opposite sides of a circuit board with respect to one another, and arranged to be overlapped with one another (as recited in pending claim 18). As such, Examiner Kwok agreed to withdraw the §102(b) rejections of pending claims 1, 8 (pending claim 9 rewritten in independent form) and 18 over Otani and Asano.

Examiner Kwok stated that she would further consider the features of pending claims 9 and 18 upon receipt of Applicants' response to the current Office Action. As requested by Examiner Kwok during the above-mentioned telephonic interview, the following is a discussion of the advantages attributable to the claimed overlapping arrangement of the vibration element and semiconductor circuit chip. As will be discussed further below, Applicants discovered that overlapping the vibration element and the semiconductor integrated circuit chip (as claimed) prevents unwanted rotational forces from acting upon the sensing element and consequently interfering with the measurement of linear motion by

the sensing element. In addition, the claimed overlapping relationship between the vibration element and the semiconductor integrated circuit chip allows for the use of a less complicated amplification means to amplify signals from the electrode leads connected to each of the vibration element and the semiconductor integrated circuit chip.

Overlapping the vibration element and the semiconductor integrated circuit chip as claimed aligns the centers of gravity of the vibration element and the semiconductor integrated circuit chip such that the centers of gravity are nearly identical in the X-Y plane. If the vibration element and integrated circuit chip centers of gravity are not substantially aligned in this manner, an unwanted rotational component tends to occur when the vibration element is being moved in a linear direction. This is so because one side of the circuit board will seem heavier than the other side, which causes the circuit board (and, thus the vibration element) to rotate at an angle about its Z-axis in response to the linear motion. This unwanted angular velocity is detected as noise and interferes with the detection of the desired signal corresponding to the linear motion. Consequently, the unwanted rotational component results in an erroneous measurement of the extent of the linear motion.

In addition to the above, overlapping the vibration element and the semiconductor integrated circuit chip (as claimed) reduces the lengths of the electrode leads that are used to carry electrical signals between the semiconductor integrated circuit chip and the vibration element. This arrangement also allows the electrode leads between the semiconductor integrated circuit chip and the vibration element to be nearly identical in length. Thus, the same amount of amplification can be used to process the signals transmitted in each of the leads. As such, complications (e.g., more variables injected into the processing system) associated with gyroscope sensor devices in which the electrode leads connected between the semiconductor chip and the vibration element are of different lengths can be avoided.

It is respectfully submitted that neither of Otani nor Asano disclose or suggest the above-discussed advantages attributable to overlapping the vibration element and semiconductor integrated circuit chip, as claimed. For at least the foregoing reasons, Applicants respectfully submit that all pending claims herein define patentable subject matter over the applied prior art of record.

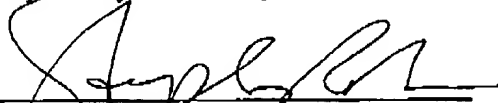
If Examiner Kwok believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, she is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

September 10, 2003

Date



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